EH2PUB/10-97/06SR

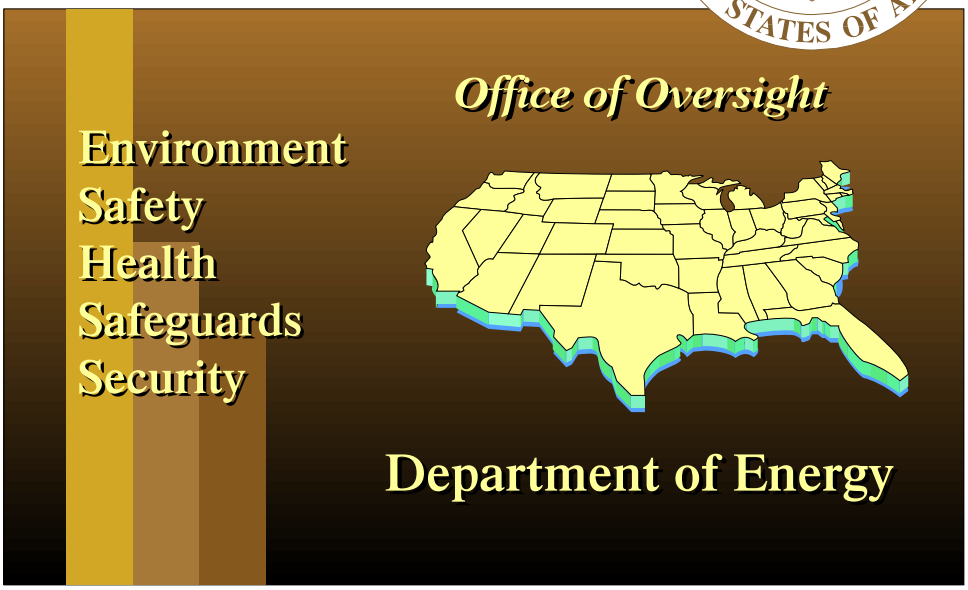
OVERSIGHT

Independent Oversight Followup Review of the

Status of Groundwater Tritium Plume Recovery Activities at the

Brookhaven National Laboratory

October 1997



Office of Environment, Safety and Health

Executive Summary

EVALUATION:	Office of Oversight Review of Groundwater Tritium Plume Recovery Activities
SITE:	Brookhaven National Laboratory
DATES:	August 1997

Scope

This DOE Office of Oversight followup review strictly focused on the effectiveness of DOE and BNL efforts to identify and eliminate the source of the tritium leak and mitigate the tritium groundwater plume at the Brookhaven National Laboratory (BNL) High Flux Beam Reactor (HFBR). This followup review is one part of an ongoing DOE Office of Environment, Safety and Health (EH) effort to ensure that the tritium contamination problem is successfully resolved. Previous efforts included the Interim Evaluation of Tritium Plume Recovery Activities at BNL and the Integrated Safety Management Evaluation of BNL, which were completed in February 1997 and April 1997, respectively.

Results

Significant progress is being made toward the identification and remediation of the tritium plume. Specific accomplishments include:

- Three of four HFBR spent fuel shipments have been completed. The final shipment is scheduled for September 1997. Completing these shipments is a prerequisite to emptying the fuel pool, which is necessary to eliminate continued leakage and to upgrade the pool to prevent leaks in the future.
- All fuel has been removed from the reactor vessel.
- The leading edge of the tritium plume is being pumped to the recharge basin, and volatile organic compounds are being removed
- Air monitors have been installed at the recharge basin.
- Additional wells, including 74 vertical profile wells and 36 of a planned 38 permanent groundwater monitoring wells, have been installed to profile and monitor the tritium plume.
- Conceptual design has been completed for a stainless steel liner and leak detection system for the HFBR fuel pool.
- Reactor building penetration seals and floor joints are being upgraded and measures to provide additional containment for embedded HFBR process piping are being implemented.
- The HFBR safety analysis report (SAR) is being revised to meet existing standards.
- The remediation efforts have been formalized to a project with an approved baseline.
- A Nuclear Regulatory Commission license amendment for the third and fourth spent fuel shipments will be obtained.
- The supplemental environmental impact statement that was approved to ship spent fuel is less than one year old.

These accomplishments reflect current strong project leadership and significant staff efforts within both the DOE Brookhaven Group (BHG) and BNL. These recent accomplishments have been made possible through a coordinated and cooperative effort between DOE Headquarters (including the Offices of Energy Research; Nuclear Energy, Science and Technology; Environmental Management; and Environment, Safety and Health), the Chicago Operations Office, and BHG,

regulators, legislators and BNL stakeholders. Such cooperation has been essential in meeting many challenges and requirements associated with the plume recovery, including allocation of funding, procurement of materials, installation of wells, analysis of samples, and accelerated review and approval of proposed actions and permits necessary to ship fuel and to characterize and pump the tritium plume.

In addition to actions directly related to the tritium plume, BHG and BNL have also completed or are in the process of completing improvements in other aspects of their environmental protection program, based on lessons learned while responding to the tritium contamination. They have completed the first phase of an environmental vulnerability review of other BNL facilities; this effort has identified significant issues that need to be resolved. In addition, the funding for the BNL groundwater monitoring program has been increased and BNL has installed groundwater monitoring wells near active facilities that were not previously covered by environmental restoration monitoring.

Although much progress has been made, many key activities remain to be accomplished, including draining the spent fuel pool, installing the spent fuel pool liner, completing modifications to HFBR, completing the SAR revision, and selecting a long-term alternative for plume management. These activities are being performed according to established plans and schedules, which have been appropriately reviewed and modified as necessary to achieve the intended objectives. The Office of Nuclear Energy, Science and Technology has recently reaffirmed its commitment to revise the SAR on schedule to support HFBR.

Conclusions

Current management of the BNL tritium remediation project is effective, and progress has been substantial. Continued attention is needed to ensure that ongoing activities are completed on schedule in the face of a number of upcoming challenges, such as potential funding and staff reductions, the upcoming transition of contractors, and the need to devote resources to issues identified by the environmental vulnerability assessment and other groundwater contamination discoveries.